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ABSTRACT

A study investigated whether various home and school factors were related to first grade reading gain. Parents of all second grade students in a school district were asked to complete questionnaires eliciting the number of persons living in the household, the strictness of parental discipline, number of hours spent reading to the child each week, number of classroom visits, number of hours the child spent watching television each week, the child's bedtime, the child's preschool and kindergarten attendance, and the number of parent-teacher conferences held during the first grade year. School records were used to determine the child's absenteeism in first grade, the number of students in the first grade class, the child's free-lunch status, and pretest and posttest reading scores in first grade. Analyses revealed that students with larger learning gains tended to be absent less frequently than other students, that children attending preschool made larger learning gains than other students, and that larger learning gains were associated with a greater number of younger brothers and sisters. (FL)

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Identifying Variables Associated with First Grade Reading Gain

PREPS RESEARCH PROJECT

1978 - 79

The Central City Independent School System
Central City, Kentucky

REPORT PREPARED BY:

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FORWARD

This document is the final report of a PREPS project conducted by the PREPS Research Team of the Professional Development Network housed at Western Kentucky University; Mr. Jack Day, Superintendent of the Central City Independent School System; and Mr. Wayne Divine, Principal of Central City Elementary School.

The PREPS Research Team

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TITLE

Identifying Variables Associated With First Grade Reading Gain

INTRODUCTION

The administration of the Central City Independent School System was concerned with exploring how various school and home factors were associated with learning gain of first grade students. The study was designed to sort through fifteen different variables to determine which ones were significantly related to first grade learning gain. Variables identified as significant were to be used to generate hypotheses for future testing.

STATEMENT OF THE PROBLEM

Does the pattern of various home and school factors differ significantly according to the amount of learning gain that occurred during the first grade?

INSTRUMENTATION

An eleven item parent survey instrument was jointly developed by the PREPS Research Team and Mr. Wayne Devine of The Central City Independent School System. The instrument asked parents the following questions as of the time the child was in first grade: the number of persons living in the household, the strictness the parent used in disciplining the child, the parents' expectation for the educational accomplishment of the child, the number of hours the parent read to the child each week, the number of visits the parent made to the childs' classroom during first grade, the number of parent-teacher conferences held during the time the child was in first grade, the number of hours a week the child watched television, the time the child usually went to bed, where the child ate breakfast, whether the child attended preschool, and whether the child attended kindergarten. A copy of the instrument can be found in the appendix.

The following information was collected from school records: sex of child, number of days absent in first grade, number of students in first grade class, application for free lunch, and pretest and posttest reading scores in first grade.

The percentile score on the Gates-MacGinitie reading readiness test was used as the pretest score. Data were collected on students who were in the first grade during the 1977-78 school year. This pretest was administered early in the school year. The percentile score for total reading on the Comprehensive Test of Basic Skills (CTBS) was used as the posttest measure. The posttest was administered to the same students in the spring of 1978 (end of first grade).

POPULATION AND SAMPLING

The population consisted of all first grade children enrolled in this Central City Independent Elementary School during the 1978-79 school year (n=88). The initial sample used in this study consisted of all students still enrolled in Central City Elementary School during the 1979-80 school year (n=88). The final sample consisted of the 87 complete records that were available (98.9%).

DATA COLLECTION PROCEDURES

Instruments were circulated to parents by asking the second grade students (1978-79 school year) to take a copy of the parent survey home. Approximately 98 percent of parents returned the instruments within two weeks of distribution.

School records were used as the source of information regarding the childs' sex, attendance in first grade, application for free lunch, number of students in first grade, and test scores.

ASSUMPTIONS AND LIMITATIONS

This study used two different achievement tests. The Gates-MacGinitie was the pretest measure. The CTBS was the posttest measure. Both tests were nationally normed and reported in percentiles. The analyses of this study were based on the assumption that the two tests measure the same concepts and their percentile scores are calculated to reflect the same universe.

FINDINGS

Three categories of learning gain were computed on first grade scores. The three categories were:

(1) negative learning gain - where posttest percentile score was less than pretest percentile score

(2) smaller learning gain - where posttest percentile score was from zero to ten points above pretest percentile score

(3) larger learning gain - where posttest percentile score exceeded pretest percentile score by more than ten points

Chi square analyses with the Yates correction was used to compare each of the home and school factors of the study to determine whether any of the factors differed significantly across the three categories of learning gain. Two levels of significance were chosen for this study: the 0.05 and the 0.10. Analyses showing 0.50 or less probability of error were referred to as statistically significant. Analyses showing between 0.10 and 0.05 probability of error were referred to as a trend.

Results of the chi square analyses were as follows:

Number of Persons in Household

When learning gain was compared to three categories of persons in the household (3 and 4, 5 and 6, 7 or more) a chi square of 3.78 was obtained. This figure was not significant at either the 0.50 or 0.10 level.

Learning Gain	Persons in Household			
	3 and 4	5 and 6	7 or more	total
Negative Gain	11	7	4	22
Smaller Gain	15	8	9	32
Larger Gain	15	5	13	33
Total	41	20	26	87

chi square = 3.78 ($p > 0.10$)

Number of parents in Household

When learning gain was compared to number of parents in the household (1 parent and 2 parents) a chi square of 0.96 was calculated. This figure was not significant at either the 0.50 or 0.10 level.

Learning Gain	Number of Parents in Household		
	1 parent	2 parents	total
Negative Gain	2	16	18
Smaller Gain	5	19	24
Larger Gain	3	21	34
Total	10	56	66

chi square = 0.96 ($p > 0.10$)

Number of Older Brothers and Sisters

When learning gain was compared to four categories of older siblings (0, 1 or 2, 3 or more) a chi square of 2.88 was calculated. This figure was not significant at either the 0.50 or 0.10 level.

	Number of Older Sisters and Brothers			
Learning Gain	0	1 or 2	3 or more	total
Negative Gain	8	9	5	22
Smaller Gain	11	10	11	32
Larger Gain	14	7	12	33
Total	33	26	28	87

chi square = 2.88 ($p > 0.10$)

Number of Younger Brothers and Sisters

When learning gain were compared to three categories of younger siblings (0, 1, and 2 or more) a chi square of 7.45 was obtained which was significant at the 0.11 level. The trend of this analyses showed that larger learning gain was associated with a greater number of younger brothers and sisters.

	Number of Younger Sisters and Brothers			
Learning Gain	0	1	2 or more	total
Negative Gain	12	3	7	22
Smaller Gain	11	10	11	32
Larger Gain	7	13	13	33
Total	30	26	31	87

chi square = 7.45 (significant at the 0.11 level)

Parental Strictness

The questionnaire asked parents to estimate how they perceived their discipline in relationship to that of other parents. Three categories were available for them to check: more strict than the average, about average in strictness, and less strict than average. No parent listed less than average. A chi square calculated on learning gain and two categories of strictness was 0.28. This figure was not significant at either the 0.50 or 0.10 level.

	Level of Strictness		
Learning Gain	More than Average	Average	total
Negative Gain	5	13	18
Smaller Gain	6	18	24
Larger Gain	5	19	24
Total	16	50	66

chi square = 0.28 ($p > 0.10$)

Parental Expectation

The questionnaire asked parents how far they expected their child to go in school. Although six categories were available to the parents, only two categories were used by parents: twelfth grade and attend college. A chi square calculated on learning gain and two levels of expectation was 0.46. This figure was not significant at either the 0.05 or 0.10 levels.

Learning Gain	Parental Expectation: Twelfth Grade	Attend College	total
Negative Gain	6	12	18
Smaller Gain	8	16	24
Larger Gain	10	14	24
Total	24	42	66

chi square = 0.46 ($p > 0.10$)

Hours Read to Child

Parents were asked the number of hours they read to their children each week. Responses were grouped into three categories: less than three, four to nine, and greater than nine. When learning gain was compared to hours read, a chi square of 3.00 was calculated. This figure was not significant at either the 0.50 or 0.10 levels.

Learning Gain	Hours read to Child per Week: 0 - 3	4 - 9	10 or more	total
Negative Gain	7	9	6	22
Smaller Gain	15	7	10	32
Larger Gain	16	8	9	33
Total	38	24	33	87

chi square = 3.00 ($p > 0.10$)

Parent - Teacher Conference

Parent-Teacher conferences were categorized as follows: less than 2, 2 or 3, more than 3. A chi square analysis comparing teacher conference with learning gain was 2.09. This figure was not significant at either the 0.50 or 0.10 levels.

	Number of Parent-Teacher Conferences			
Learning Gain	0 or 1	2 or 3	3 or more	total
Negative Gain	6	10	6	22
Smaller Gain	7	11	14	32
Larger Gain	7	11	15	33
Total	20	32	35	87

chi square = 2.09 ($p > 0.10$)

Television Watching Habits

Parents were asked to describe their children in terms of television watched using three categories: heavy watcher (30 or more hours per week), medium watcher (between 15 and 30 hours per week), or light watcher (less than 15 hours per week). Heavy and medium categories were combined because of the few responses to heavy television watching. When learning gain was compared with television watching a chi square of 4.78 was calculated. This figure was not significant at either the 0.05 or 0.10 level.

Learning Gain	Amount of Television Watched		
	Heavy & Medium	Light	total
Negative Gain	11	7	18
Smaller Gain	17	6	24
Larger Gain	19	5	24
Total	47	18	66

chi square = 4.78 ($p > 0.10$)

Bedtime

Parents were asked what time their child went to bed each evening. Three response categories were used by parents: 8 p.m., 9 p.m., and 10 p.m. Data for analysis was categorized by 8 p.m. and by 9 p.m. or greater to balance cells. A chi square of 5.88 was calculated comparing students' bedtime with learning gain. This figure was not significant at either the 0.50 or 0.10 level.

Learning Gain	Bedtime		
	8 p.m.	9 p.m. or later	total
Negative Gain	6	12	18
Smaller Gain	14	10	24
Larger Gain	7	19	24
Total	27	89	66

chi square = 5.88 ($p > 0.10$)

Years Spent in Preschool

The childs' attendance in preschool was compared with learning gain. A chi square of 5.60 was found to be significant at the 0.06 level. The trend of this analysis showed that a higher proportion of students attending preschool made larger learning gain in first grade.

	Attendance in Preschool		
Learning Gain	YES	NO	Total
Negative Gain	6	16	22
Smaller Gain	19	13	32
Larger Gain	17	16	33
Total	45	42	87

chi square = 5.60 (significant at the 0.06 level)

Attendance in Kindergarten

The childs' attendance in kindergarten was compared with learning gain. A chi square of 2.79 was calculated. This figure was not significant at either the 0.50 or 0.10 level.

	Kindergarten Attendance		
Learning Gain	YES	NO	Total
Negative Gain	16	2	18
Smaller Gain	17	7	24
Larger Gain	20	4	24
Total	53	13	66

chi square = 2.79 ($p > 0.10$)

Sex of Child

Boys and girls were compared on learning gain. A chi square of 0.16 was found. This figure was not significant at either the 0.05 or 0.10 level.

Learning Gain	Sex of Child		
	Boys	Girls	total
Negative Gain	13	9	22
Smaller Gain	11	9	20
Larger Gain	20	13	33
Total	44	31	75

chi square = 0.16 ($p > 0.10$)

Application for Free Lunch

Application for free lunch was used as an indicator of the socio-economic status of child. Few children had made application for free lunch so care must be taken with the interpretation of the data. A chi square of 1.43 was calculated. This figure was not significant at either the 0.50 or 0.10 level.

Learning Gain	Application for Free Lunch		
	YES	NO	total
Negative Gain	2	20	22
Smaller Gain	1	19	20
Larger Gain	5	28	33
Total	8	67	75

chi square = 1.43 ($p > 0.10$)

Days Absent in First Grade

Three categories of days absent were compared with learning gain. The three categories of absenteeism were: 0 to 7 days, 8 to 14 days, and 15 or more days. A chi square of 13.72 was calculated which was significant at the 0.01 level. This is the only analysis of the study that reached statistical significance ($p < 0.05$). The analysis showed that students with larger learning gain tended to be absent less frequently than other students.

	Days Absent In First Grade			
Learning Gain	0 to 7	8 to 14	15 or more	total
Negative Gain	7	12	3	22
Smaller Gain	14	5	13	30
Larger Gain	18	6	9	33
Total	39	23	25	85

chi square = 13.72, significant 0.01

SUGGESTIONS FOR FUTURE RESEARCH

The study was designed to be exploratory and produce plausible hypotheses for further study. One variable was found to be significant beyond the 0.05 level (days absent from first grade), one variable was found to be significant between the 0.10 and 0.05 level (attendance in preschool), and one variable was found to be significant slightly beyond the 0.10 level (number of younger brothers and sisters - $p = 0.11$).

None of these three variables appear to be directly manipulatable by the administration of the Central City Independent School System. All three variables appear to have some potential for manipulation by the parents of first

grade children although for two of the three variables (attendance in preschool and number of younger brothers and sisters) parental decisions have been made prior to their child's attendance in first grade. The third variable (number of days absent) appears to hold some potential for parental manipulation. Consequently, this third variable appears to be the variable upon which future research can best be built.

It would appear plausible that the Central City school administration could indirectly help increase children's learning gain by working with first grade parents on ways to increase children's school attendance. It is suggested that the school sponsor a program for first grade parents that would explore such topics as, "improving your child's health," ways to detect "pretend illnesses," and "holding school at home" and study the effects of this program on first grade reading gain.

This study suggests the following hypothesis for further study:

> *First grade children whose parents are involved in a school sponsored program designed to explore ways to increase their childs' school attendance will show greater learning gain in reading than first grade children whose parents are not involved in such a program.*

Further research might also focus upon determining the reasons for high absenteeism in first grade. The following research questions might be asked.

(1) Is high absenteeism in first grade associated with poor health?

(2) Do parents of first grade children with higher absenteeism differ in their childrearing attitudes from parents of first grade children with lower absenteeism?